Construct Delta levees in a manner such as to reduce the organic content of levee material

Category: (To be developed)

Resources Area: Water Quality, WQ-O-7
Related Options: WS-FC-1, PWR-D-3

Resources Issue: Some Delta levees contain organic soil materials which tend to erode and disperse in Delta waters and contribute to the creation of unwanted byproducts during the process of treating Delta source waters for industrial and municipal uses. Of particular importance is the formulation of trihalomethanes (suspected carcinogens) as a result of drinking water disinfection. The implementation of more stringent regulations on these byproducts requires advanced treatment processes at significant costs to local water agencies. Some recent studies identify Delta island drainage discharges as a source for more than 50% of the dissolved organic carbon measured at the project pumps. The more than 200 discharge locations within the Delta make it difficult to control dissolved organic carbon at its source. There are several related issues that may be partially addressed or impacted to some degree by this option. These issues include improved levee stability and flood control, introduction of other compounds such as salts into the Delta waters through agricultural discharges which also contributes to the creation of unwanted byproducts during the process of treating Delta source waters for industrial and municipal uses, municipal and industrial discharges into the Delta, degradation of rearing and migration habitat for the fishery, fish entrainment and mortality in the interior Delta as a result of export pumping within the Delta, and a reduction of nutrient loading to the estuary which could potentially lead to reduced biological productivity.

Discussion: Replacing Delta levees composed of organic soil materials with material low in organic content or high in mineral content (but not in heavy metals) could result in lower levels of organics and better water quality in the estuary. In addition, the quality of export water could be improved. This option could be implemented in conjunction with other measures such as comprehensive source control programs for Delta source waters that are often more cost effective and more efficient from a total resource consumption viewpoint.

Objectives addressed: Water Quality General and Specific 2; Levee and Channel Management General and Specific 1.

Significant levee alterations would likely disrupt sensitive habitat along the levees and this would require close review by experts in environmental resources.

Assumptions:

- Assume replacement levee material low in organic content or high in mineral content (but not in heavy metals) can be located in significant quantities and close enough to be economically moved to levee sites.

Key Feasibility Factors:

- Confirm significant levee replacements can be done without significant

disruption of sensitive habitat.

- Confirm replacement of organic levees with mineral levees will result in a measurable reduction in organic loading in the estuary.

Implementation Effects:

- The Water Quality TAC (WQTAC) estimated low benefits for municipal users (matrix WQ-O-7) and no benefits for other uses such as agriculture, industrial, fisheries, recreation, and environment in the WQTAC report.

Most Likely Benefits:

- The quality of the water in the estuary would be improved through a reduction in organics.

Other Possible Benefits:

- Improved water quality within the interior Delta could result in improved aquatic resources as well.
- Levees composed of mineral, as opposed to organic, soil materials may be stronger and less susceptible to failure.

Most Likely Negative Impacts:

- Potential disruption of shaded riverine aquatic habitat and adjacent levee habitat.

Other Possible Negative Impacts:

- Though much of the organic carbon discharged from Delta islands is refractory and is not involved in biological productivity of the estuary, some portion of this organic load may enhance productivity in Delta waters. To the extent such effects are beneficial to the biota, a reduction in organic carbon input could be disadvantageous to the ecosystem.

Possible Regulatory and Institutional Constraints:

- CEQA
- NEPA
- DFG Sec 1600 Permit
- Corps Sec 404 Permit
- Corps Sec 10 Permit
- Encroachment Permit

Other: Compensating measures necessary when habitat is disturbed may be overwhelming and require extensive review with current regulations.

References and Published Materials: Use Combined TAC Reference List.